BODY-CARE EQUIPMENT

CRYOSAUNA “SPACE CABIN”

OPERATION MANUAL

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1. GENERAL INFORMATION

The present Operation Manual contains the description of the cryosauna SPACE CABIN (hereinafter referred to as 'Plant'), the principles of its functioning, its technical characteristics and the user manual. While mounting and operating the Plant the users are required to follow all electric safety rules and safety rules for handling liquid nitrogen.

The Cryogenic Plant "Cryosauna 'SPACE CABIN'" is not to be considered as medical equipment, therefore the requirements of the Directive 93/42/EEC do not apply.

ATTENTION! The Operation Manual is an integral part of the product and should be delivered to the end user along with the equipment.

Please read this manual carefully before operating the Plant. Here you can find important information relating to the safety of the Plant, its operation and maintenance and also description of all the operation procedures. Please keep this manual on site for future reference.

The warnings referred in the manual are aimed at ensuring safe operation of the Plant, so that safety features provided by the Manufacturer are not violated due to mistakes and omissions in mounting or in operation practices.

Another purpose of these warnings is to alert the Consumer and the service personnel to the safety issues. The present manual provides an introduction to the Plant and detailed rules of operation, mounting and maintenance, which ensure its trouble-free and safe operation and continuous service if observed.

If the Plant is subject to resale or passed to another owner and/or to be relocated, please make sure that the manual is transferred together with the Plant, to be consulted by a new owner. Please also notify the Manufacturer/Dealer so that an authorized representative may supervise dismounting of the Plant, its transition and installation in a new location.

If the Plant is subject to demolition, the parts of the Plant which may be potentially dangerous should be recycled according to the provisions of the national environmental legislation.

ATTENTION! Before operating the Plant or starting any technical maintenance operations please kindly consult the Manual. Only the qualified personnel (trained by the Manufacturer or his authorized representative) is allowed to operate and service of the Plant.

CAUTION! Before any maintenance or repair the Plant should be unplugged.

CAUTION! VIOLATION OF SAFETY RULES DURING OPERATION OF THE PLANT MAY LEAD TO ACCIDENTS.

2. LIQUID NITROGEN

All liquid nitrogen used as a refrigerant working medium is to be handled, stored and transported in accordance with any local and national regulations of the region where the Plant is operated.

Liquid nitrogen is liquid gas boiling at low temperatures, colorless and without odour, with boiling point –195,75ºC). Nitrogen itself is neither toxic nor explosive. In the gaseous form it is contained in the atmospheric air (78,084% of the volume).

The main hazards existing when working with liquid nitrogen are associated with its low temperature and the fact that as a result of its evaporation a considerable amount of gaseous nitrogen appears. This gas, if allowed to escape into the ambient air of a closed area may lead to reduction of oxygen content in the ambient air to the point where it will impair normal respiration. If the oxygen content in the ambient air drops from 21% to 9%, loss of consciousness can occur without any prior symptoms, such as giddiness. Therefore it is strongly advised to ensure proper ventilation in an operation room for cases of emergency escape of nitrogen vapours.

3. DESCRIPTION AND CONCEPT OF THE PLANT

Functioning of the plant is based on evaporation of liquid nitrogen and its supply into the thermally insulated cabin.

Structurally the Plant is a monoblock, assembled on site. The units are to be assembled on a common platform and jointed together by fastening bolts.

3.1. Platform with refilling compartment

The platform serves as a base for assembling the cryosauna, where all the other assembly units are installed.

At the front lower edge of the refilling compartment doorway an inox plate (Dewar vessel ramp) is installed to roll in a Dewar vessel into the refilling compartment.

In the refilling compartment there is an intake pipe through which either liquid nitrogen (during a session) or air (during drying) is supplied into the plant. The intake pipe should always be lowered. It is lifted only to roll in or to take out a Dewar vessel. The vessel is only rolled in to conduct a session or a series of sessions. After the sessions are over the Dewar vessel should be rolled out of the refilling compartment.

In the upper part of the refilling compartment there are bellows which are fixed to the lower part of the gas preparation device. While liquid nitrogen is supplied into the gas preparation device the bellows are pressed down with air pressure to the neck of the Dewar vessel.

3.2. Gas preparation device

Serves to generate vaporous nitrogen from liquid nitrogen, mix it with air and supply the gas mixture into the cabin.

At the right-hand wall where the cabin is located there is an opening to supply a cooled gas mixture into the cabin. Inside the cabin it is covered by a detachable panel (shield) which also serves as a guide for cold air stream. At the lower part of the wall there is an opening to improve air mixture circulation.

At the left-hand wall there is an exhaust opening for discharge of nitrogen vapors. A corrugated pipe is fixed with a clamp to the opening, which discharges vapors outdoors or into forced ventilation system.

At the back wall of the gas preparation device there are connectors to terminate a temperature sensor and an elevator wire.

CAUTION! It is strictly prohibited to open the gas preparation device cover while the Plant is functioning!

3.3. Client cabin with a door

The cabin is designed to provide immediate cooling of the skin with vapors of liquid nitrogen having super-low temperature. The cabin itself is a cylindrical thermally insulated construction with a door. The cabin is equipped with a system of channels for the flow of gaseous nitrogen.

In the upper part the client cabin has an aperture for recirculation of nitrogen-air mixture, which is linked through a channel to the gas preparation device. The lower part of the cabin is equipped with a ventilation opening covered by a protective shield which ensures evacuation of nitrogen vapors from the cabin at the end of a session during the ventilation phase when the elevator with a customer goes down.

The cabin is provided with an electrically-operated lift (elevator) to adjust the position of a person inside the cabin, so that his shoulders are level with its upper rim.

ATTENTION! The customer's direct contact with liquid nitrogen inside the cabin is absolutely impossible due to design of the Plant.

3.4. Electric cabinet

The electric cabinet, located inside the gas preparation device, contains all the electrical boards which ensure control of the plant.

At the front panel of the gas preparation device there is a display which shows information about the state of the plant and settings of the session, and a control board to operate the cabin.

On the left from the control panel there is an automatic switch to turn the plant on/off.

Inside the refilling compartment on the left-hand wall, there is a rheostat which can regulate rate of work of the engine supplying liquid nitrogen. The rheostat can be regulated **only upon agreement** with the manufacturer or his authorized representative.

3.5. Step for operator

Step serves to facilitate access to control panel for an operator and monitoring the customer's state during the session.

3.6. Dewar vessel (40 l)

Dewar vessel is a vacuum bottle used for transportation and storage of liquefied gases. It is very sensitive to mechanical damage as its outer casing is made of aluminum. Also it should be handled carefully because the inner flask can be displaced and the Dewar will lose its vacuum tightness.

Dewar vessel is supplied together with a roller base to roll in the vessel into the refilling compartment.

There is also a measuring stick for checking the level of liquid nitrogen in the Dewar vessel. It contains marks as follows: full vessel, half of the vessel, a quarter of the vessel.

Before rolling the vessel into the refilling compartment the operator should check with the measuring stick the level of liquid nitrogen in the vessel and put the vessel onto the roller base.

Together with the vessel a funnel for liquid nitrogen is supplied. If in the Dewar vessel before the session there is less than ¼ of liquid nitrogen, a full vessel can be used, and then with the help of a funnel the operator can pour the remainder of liquid nitrogen into a fuller vessel. Though it is strongly recommended to follow the procedure described in item 8.2 (p. 10)

4. TECHNICAL CHARACTERISTICS

4.1 Consumption, operating temperature and hoist characteristics

- Overall dimensions of the plant:
  - width – 900 mm;
  - length – 1,550 mm;
  - height – 2,450 mm (Lux model) or 2,200 mm (Premium, Standard models);
- Weight of the cryosauna does not exceed 380 kg, total area covered: no more than 2.5 sq.m;
- Power consumption: no more than 1.5 kW;
- Mains voltage – 220-230 V;
- Mains frequency – 50/60 Hz;
- Acoustic pressure – less than 70 dBa;
- During the session the temperature inside the cabin down to −196°C;
- Operating conditions in the client cabin (to −120°C) are attained in less than 30 sec.;
- Liquid nitrogen consumption for one session − no more than 3 kg;

〉 Liquid nitrogen consumption for primary cooling - no more than 3 kg;

〉 The Plant can ensure uninterrupted service for 120 minutes if the breaks between sessions don´t exceed 10 minutes;

〉 The elevator lifts a customer to the height not less than 30 cm;

〉 Maximum weight lifted by the elevator – up to 120 kg;

〉 Recommended temperature in the client cabin during a session: from −120° C to −170° C;

〉 The Plant is manufactured with protection level IP54;

〉 The service life of the Plant is 10 years from the date of its production.

5. REQUIREMENTS TO THE ROOM

〉 The area of the room shall not be less than 6 m ².

〉 The door frames should be at least 750 mm wide to allow the blocks which constitute a cryosauna to be carried inside.

〉 For exhaust system, there should be an opening provided, 120 mm in diameter, so that the nitrogen vapors are dissipated outdoors. It can be made either in the wall or in the window / vent sash. Forced ventilation and conditioning are strongly advised. It is desirable to install also oxygen sensors.

〉 Grounded electrical outlets;

〉 Air-conditioning and ventilation with circulating air (both intake and exhaust);

〉 Ambient temperature (15...24)°C;

〉 Relative humidity (30...50)%;

〉 The plant must be located on the ground with a horizontal flat surface with a slope no more than 0.5%

〉 The distance from the walls to either side of the plant - at least 300 mm;

〉 Ceiling height - no less than 2500 mm.

6. CONDUCTING A SESSION, CONTRAINDICATIONS

6.1. Basics of WBC

The duration of a first cryotherapy session should not exceed 60 to 90 seconds, the temperature should be −120° to −140 C°. The duration of every next session is increased by 30 seconds, so that overall duration does not exceed 180 seconds. Duration of cryotherapy course depends on a specific problem the customer has and is indicated by a competent specialist. Normally it is better to start with a course of 25 sessions, followed by 20, 15 and 10 sessions every 6 months. The course should include at least 10 sessions.

Indications for cryotherapy: see guidelines.

Before the session, the customer is recommended to have a rest for 10-20 minutes to adjust to the room temperature.

The operator instructs the customer, explains safety rules and contraindications, the principles of whole-body cryotherapy.

The customer enters the cabin in warm socks, gloves and underwear made of natural fabric. The operator lifts the elevator so that the shoulders of the customer are level with the upper rim of the cabin. The cabin is filled with nitrogen vapors and air mix. The customer puts his hands protected with gloves on a special rim in the cabin and starts moving slowly. During the session, the operator stays near the cabin all the time monitoring the state of the customer. The operator also controls that the door of the cabin is tightly closed. After the session, the customer slowly dresses in the dressing room and rests for 10 minutes.

6.2. Contraindications to cryotherapy:

〉 bad general condition;

〉 decompensated chronic heart diseases;

〉 myocardial infarction or the recovery period after that;

〉 stage II essential hypertension, III degree of essential hypertension (blood pressure ≥ 180/100 mm Hg);

〉 stage II heart failure;

〉 disorders of cardiac conduction and rhythm with poor prognosis;

〉 Raynaud's syndrome, acrocyanosis, systemic vasculitis;

〉 cryoglobulinemia, agammaglobulinemia, cryofibrinogenemia;

〉 stroke;

〉 fever;

〉 active pulmonary tuberculosis;

〉 malignant tumours;

〉 bleeding diathesis;

〉 severe anaemia;

〉 hypothyroidism;

〉 hysterical neurosis;

〉 individual intolerance to cold;

〉 cold rash;

〉 pregnancy;

〉 age under 10 years old.

Note: presence of any implants (silicon, intraosseous metal rods and plates) is not contraindicated for cryotherapy.

7. SAFETY

7.1. Customer safety

〉 The customer can leave earrings on, but it is better to remove the watch and finery on the body. It is also strongly recommended to remove or cover with sticking plaster any piercings on the body exposed to cold air.

〉 To make most of cryotherapy session the customer needs to have exposed as much skin as possible. To feel more comfortable during the session the customer should wear linen (pants and bra for women) made of natural fabric (e.g. cotton). To protect the legs the customer should wear warm (woolen) socks or half-hose. To protect hands the customer has to wear warm (woolen) gloves. The customer should move (rotate) in the cabin slowly all the time during the session to feel more comfortable.

〉 The customer should not use any cream or lotion before the session. It is strongly recommended to remove any cream he/she may have used on the body, especially on the legs. Water (sweat) is not a problem.

〉 After the hoist lifts the customer up, he/she put the hands on the upper rim of the cabin.

〉 The servicing personnel shall watch the progress of the session while the cabin is filled with gaseous nitrogen, monitor and assess the state of the customer during the session at all times.

〉 The servicing personnel shall help to keep the gaseous nitrogen away from the airways of the customer.

〉 Unless absolutely necessary the cabin's door should not be opened before the session is over and gaseous nitrogen is evacuated from the cabin automatically.

〉 If the door was opened when the cabin was full of nitrogen vapors, the room should be ventilated for several minutes to prevent lowering of oxygen level.

7.2. Safety instructions for handling cryogenic vessels

〉 The vessel's neck should be closed only with a standard stopper, it is prohibited to use other stoppers or plugs for this purpose.

〉 It is prohibited to close the vessel's neck tightly because through evaporation of certain amount of liquid nitrogen the excessive pressure inside the vessel is created, thus preventing the oxygen penetration from the air outside. Besides, the pressure rise increases the risk of the vessel's damage or ejection of liquid nitrogen.

〉 It is not allowed to insert cotton pads or other accessories for cryogenic therapy procedures into the vessel. Accumulation of foreign matters in the vessel with liquid nitrogen may lead to freeze-up inside the vessel and cause its destruction or failure of the Plant.

〉 In order to avoid excessive evaporation of liquid nitrogen from the vessel, the vessel should be stored away from heating appliances and away from direct sunlight.

〉 If during operation of a vessel hoar-frost appears on the surface and its layer thickens due to evaporation of liquid nitrogen, it may indicate vacuum loss. In this case the liquid nitrogen should be removed from the vessel, the vessel itself should be heated and dried for 24 hours and then repaired.

〉 Never refill liquid nitrogen in a depressurized vessel.

〉 Please remember, that an internal vessel is hanging on the neck of an external vessel with no additional support. That's why careless handling of the vessel (impacts, drops, etc.) may result in its destruction.

7.3 Liquid nitrogen safety

〉 **Avoid the contact of liquid nitrogen with bare skin.**

〉 While pouring liquid nitrogen from one vessel to another, protect the hands with gloves and the foot with protective footwear.

〉 In case of coming into contact with liquid nitrogen the affected area should be immediately washed with plenty of water.

8. OPERATION OF THE PLANT

8.1 Control of the Plant

Plants are completed with a usual keyboard control panel .

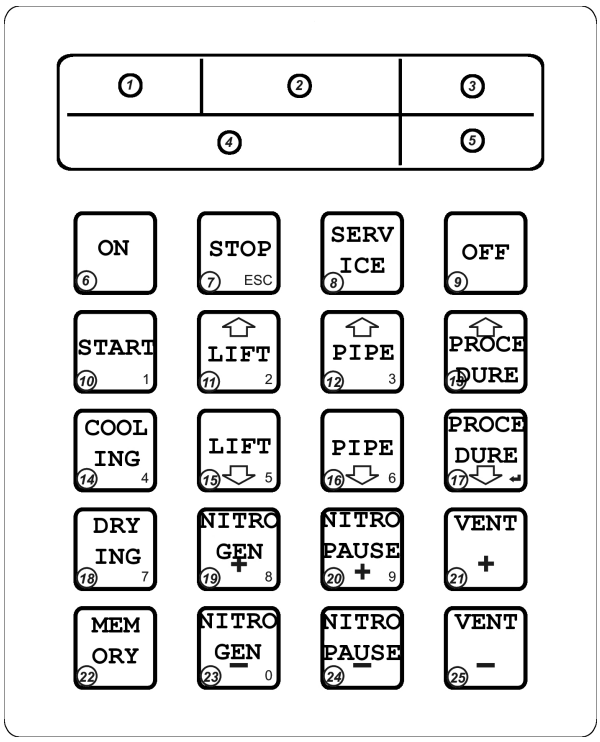


Fig.1. Keyboard

1. DISPLAYING THE TEMPERATURE IN THE CABIN
2. DISPLAYING NITROGEN FEED – PAUSE TIME
3. DISPLAYING SESSION TIME OR TIME LEFT BEFORE THE CURRENT MODE IS FINISHED
4. DISPLAYING SYSTEM MESSAGES
5. DISPLAYING CONTROL MODE (AUTOMATIC OR MANUAL)
6. SWITCH ON THE PLANT
7. STOP
8. MAINTENANCE
9. SWITCH OFF THE PLANT
10. START
11. ELEVATOR UP
12. PIPE UP
13. INCREASE THE SESSION TIME
14. PRIMARY COOLING OF THE PLANT
15. ELEVATOR DOWN
16. PIPE DOWN
17. REDUCE THE SESSION TIME
18. DRYING
19. INCREASE THE TIME OF NITROGEN FEED
20. INCREASE THE PAUSE BETWEEN NITROGEN FEEDS
21. INCREASE THE VENTILATION TIME AFTER SESSION
22. MEMORY
23. REDUCE THE TIME OF NITROGEN FEED
24. REDUCE THE PAUSE BETWEEN NITROGEN FEEDS
25. REDUCE THE VENTILATION TIME AFTER SESSION

In automatic mode the temperature in the cabin is regulated within the set limits automatically. In manual mode temperature corrections are made by the operator.

8.2. Manual and automatic control mode

In most cases the session is conducted in automatic mode while the temperature in the cabin is regulated within preset limits automatically (−120° to −140 C°.).

Manual mode can be useful in the following cases:

〉 if one session should be conducted with the parameters different from preset ones, e.g., if the temperature −180 C° is needed. Start preliminary cooling, if this is a first session, change to manual mode and conduct a session with standard settings. As soon as the temperature lowers to −170°±10°C, nitrogen supply should be decreased from 3 seconds to 2 seconds with the button "NITROGEN −". If after the next supply the temperature does not remain within the given limits, the pause between nitrogen supply should be increased from 30 seconds to 40-50 seconds with button " NITROGEN PAUSE +". After this the temperature will stay within the set limits.

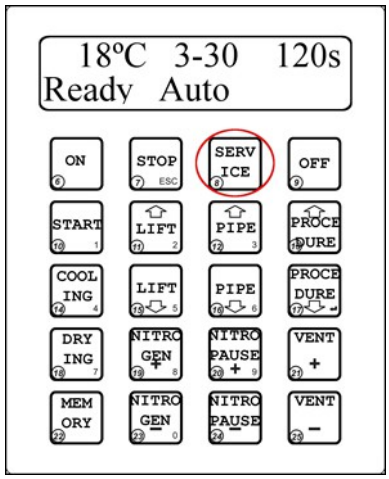
〉 if in a Dewar vessel less than ¼ nitrogen left. After the Dewar vessel is installed into the refilling compartment, change to manual mode and conduct preliminary cooling as follows: set nitrogen supply to 4 seconds (if liquid nitrogen level is much lower than ¼, the supply time should be 5 seconds) with button "NITROGEN +", then instead of the button “COOLING” press the button “START” and after 2-minute cooling start the session with the same settings. If during the session the temperature lowers to the necessary value, nitrogen supply should be decreased from 3 seconds to 2 seconds with the button "NITROGEN −" and conduct the session as usual.

As an alternative, you can start with a full vessel and after the cabin is adequately cooled, use the vessel with less than ¼ nitrogen left.

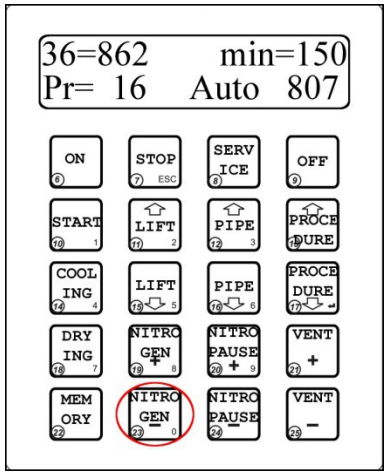
To change the mode from automatic to manual and vice versa, do as follows:

Standard set

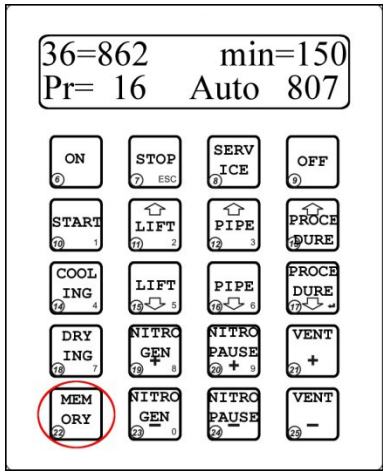
1. To change the mode, press the SERVICE button.



2. To switch from the automatic mode to manual or vice versa press the button 0



3. To exit the Service menu press the button SERVICE



4. Press the button MEMORY to save the change.

8.3. Operation sequence

Standard set: automatic mode

8.3.1. Connect the Plant to a 230V 50Hz power supply. Use a PROPERLY EARTHED connection only.

8.3.2. To supply electric power, put the automatic switch located on the left from the control panel in the upper position.

8.3.3. Press the button “ON” (6) on the control board.

8.3.4. Press down the button (18) “DRYING” to start the drying mode. After 60 minutes the function is disabled automatically and the plant is switched off. If the plant was used during the last 24 hours, stop drying after 20 to 30 min by pressing down the button “STOP” (7) and go to step 8.3.5.

8.3.5. Lift the intake pipe by pressing down the button (12) “PIPE▲“ on the control board.

8.3.6. Take a stopper from the cryogenic vessel off. Roll the cryogenic vessel into the refilling compartment up to the stop. It is obligatory to position the vessel correctly to avoid damaging the pipe-lifting mechanism.

8.3.7. Press down the button (16) “PIPE ▼“ on the control board. It is necessary to control that the pipe ends up in the vessel and doesn't run into the neck. If this really happens, immediately press "STOP" and then "PIPE ▲". Adjust the position of the vessel and repeat step 8.3.7. The pipe running into the vessel can damage the pipe-lifting mechanism.

8.3.8. Press down the button (14) “COOLING**”** and wait for about 30 seconds for automatic cooling to be finished (preliminary cooling is necessary if the sessions are conducted manually, or if a minimal temperature is required in the first seconds of the session).

8.3.9. Ask the customer to step inside the cabin and close the cabin door (the customer should wear fur boots or woolen socks, gloves and take off bracelets, watches, chains, piercings and other metal things from the body). By pressing down the “LIFT ▲” or “LIFT ▲” buttons, (11) or (15), adjust the height of the elevator so that the customer’s shoulders are aligned with the upper rim of the cabin (the customer should not breathe in the nitrogen vapors during the session).

8.3.10. By pressing down the “PROCEDURE +” or “PROCEDURE−” buttons, (13) or (17), set up the planned time of a session, which will be displayed on the monitor (3).

8.3.11. Press the button “START” (10) to begin the session (during the session, the customer should turn around slowly, the hands should be on the upper rim of the cabin).

8.3.12. After the session is over, ask the customer to go out of the cabin.

8.3.13. To start the next session repeat steps 8.3.9 through 8.3.12. The interval between the sessions should not exceed 7-10 minutes. Otherwise, go to step 8.3.14.

As an alternative, if the next customer is expected within 15 to 25 minutes, press the button (14) “COOLING” in 10 minutes after the session to keep the cabin cold, and you can wait for another 10 or 15 minutes.

8.3.14. After all the sessions are over for the day (and approximately after one hour of work), lift the nitrogen intake pipe by pressing down the button “ PIPE ▲” (12), take out the cryogenic vessel from the refilling compartment, and put on the stopper. **It is obligatory to take the vessel out before the drying to avoid damaging the pipe-lifting mechanism.**

8.3.15. Return the nitrogen intake pipe to lower position, pressing down the button “PIPE ▼**”** (16).

8.3.16. Start the drying mode by pressing down the button (18) “DRYING”.

8.3.17. After drying is over the plant is automatically switched off. Cut the electric power supply to the Plant by putting the automatic switch on the front panel of the gas preparation device to the “down” position.

8.3.18. Unplug the Plant.

Standard set: manual mode

8.3.1. Connect the Plant to a 230V 50Hz power supply. Use a properly earthed connection only.

8.3.2. To supply electric power, put the automatic switch on the front panel of the gas preparation device in the upper position.

8.3.3. Press the button “ON” (6) on the control board.

8.3.4. Press down the button (18) «DRYING» to start the drying mode. After 60 minutes the function is disabled automatically and the plant is switched off. If the plant was used during the last 24 hours, stop drying after 20 to 30 min by pressing down the button “STOP” (7) and go to step 8.3.5.

8.3.5. Lift the intake pipe by pressing down the button (12) “PIPE ▲“ on the control board.

8.3.6. Take a stopper from the cryogenic vessel off. Roll the cryogenic vessel into the refilling compartment up to the stop. It is obligatory to position the vessel correctly to avoid damaging the pipe-lifting mechanism.

8.3.7. Press down the button (16) “PIPE ▼“ on the control board. It is necessary to control that the pipe ends up in the vessel and doesn't run into the neck. If this really happens, immediately press "STOP" and then "PIPE ▲". Adjust the position of the vessel and repeat step 8.3.7. The pipe running into the vessel can damage the pipe-lifting mechanism.

8.3.8. Press down the button (14) “COOLING**”** and wait for 2 minutes for automatic cooling to be finished.

8.3.9. Ask the customer to step inside the cabin and close the cabin door (the customer should wear fur boots or woolen socks, take off bracelets, watches, chains, piercings and other metal things from the body). By pressing down the 'LIFT ▲' or “LIFT ▲' buttons, (11) or (15), adjust the height of the elevator so that the customer’s shoulders are aligned with the upper cut of the cabin (the customer should not breath in the nitrogen vapors during the session).

8.3.10. By pressing down the “PROCEDURE +” or “PROCEDURE −” buttons, (13) or (17), set up the planned time of a session, which will be displayed on the monitor (3).

8.3.11. Press the button “START” (10) to begin the session (during the session, the customer should turn around slowly, the hands should be on the upper rim of the cabin). During the session the operator should control the temperature inside the cabin. For example, the temperature −150 C° is

needed. As soon as the temperature lowers to −140°±10°C, nitrogen supply should be decreased from 3 seconds to 2 seconds with the button "NITROGEN −". If after the next supply the temperature does not remain within the set limits, the pause between nitrogen supply should be increased from 30 seconds to 40-50 seconds with button "NITROGEN PAUSE +" . After this the temperature will stay within the set limits. Before the next session, if necessary, standard settings may be restored.

8.3.12. After the session is over, ask the customer to go out of the cabin.

8.3.13. To start the next session repeat steps 8.3.9 through 8.3.12. The interval between the sessions should not exceed 7-10 minutes. Otherwise, go to step 8.3.14.

8.3.14. After all the sessions are over for the day (and approximately after one hour of work), lift the nitrogen intake pipe by pressing down the button " PIPE ▲" (12), take out the cryogenic vessel from the refilling compartment, and put on the stopper. **It is obligatory to take the vessel out before the drying to avoid damaging the pipe-lifting mechanism.**

8.3.15. Return the nitrogen intake pipe to lower position, pressing down the button "PIPE ▼**"** (16).

8.3.16. Start the drying mode by pressing down the button (18) "DRYING".

8.3.17. After drying is over the plant is automatically switched off. Cut the electric power supply to the Plant by putting the automatic switch on the right side to the "down" position.

8.3.18. Unplug the Plant.

8.4 Operation of the plant with cryogenic valves

For plants with cryogenic valves connected to pressurized cryogenic containers for storage liquid nitrogen proceed as follows:

〉 Make sure that the nitrogen supply hose is connected to the valve, and the air intake valve is open.

〉 Start drying by pressing down the button (18) "DRYING". After 60 minutes the function is disabled automatically and the plant is switched off. If the plant was used during the last 24 hours, stop drying after 20 to 30 min by pressing down the button "STOP" (7).

〉 After drying close off the air intake valve.

〉 Open the nitrogen supply valve at the pressurized cryogenic vessel (the pressure should be 1.2 to 1.5 atm.).

〉 To conduct sessions make steps 8.3.9 through 8.3.12 (see section 8.3 "Operation sequence" depending on the control mode).

〉 To conduct the following session repeat steps 8.3.9 through 8.3.12 (see section 8.3. "Operation sequence" depending of the control mode). **The interval between sessions should not exceed 7-10 minutes.**

〉 After the sessions close the nitrogen supply valve on the pressurized cryogenic vessel and remove remaining liquid nitrogen from the hose, if such function is available.

〉 Open the air intake valve (if it cannot be opened with moderate effort, try and open it 10 minutes after drying starts, when the ice thaws).

〉 Start drying by pressing down the button (18) "DRYING".

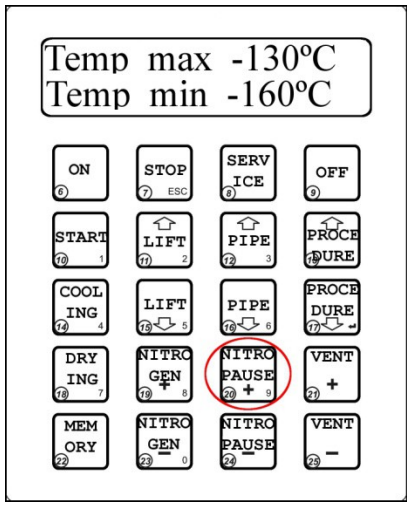
〉 After drying close off the air intake valve.

〉 After drying is over the plant is automatically switched off. Cut the electric power supply to the Plant by putting the automatic switch on the front panel of the gas preparation device to the "down" position and unplug the Plant.

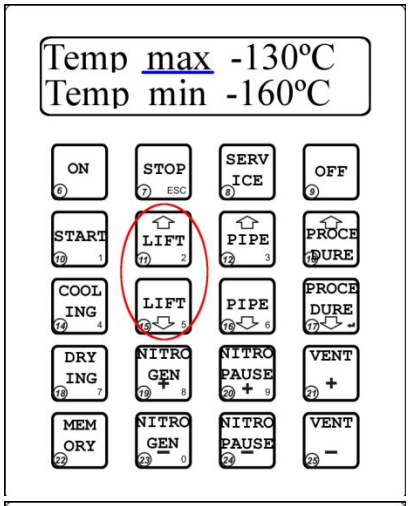
8.5. Regulating the temperature during the session

Changing the upper and lower temperature limit in the automatic mode: Standard set

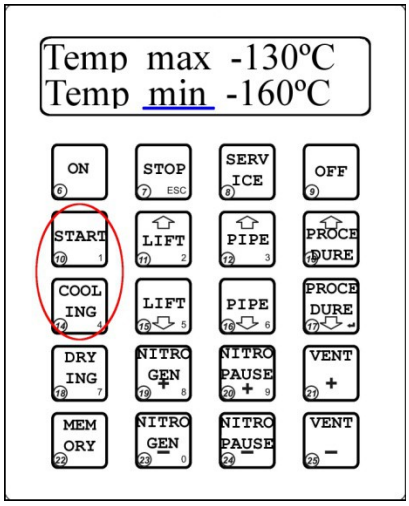
- Press the button “SERVICE”.
- The parameters of the automatic mode can be changed with the button 9.



- Upper temperature limit is changed with the buttons 2 (to increase) and 5 (to decrease)



- Lower temperature limit is changed with the buttons 1 (to increase) and 4 (to decrease)



If the temperature during the session is too low, press the button “NITROGEN –“ to decrease the nitrogen supply from 3 seconds to 2 seconds. If the temperature is not low enough, press the button “NITROGEN +“ to increase the supply time.

Changing the upper and lower temperature limit in the manual mode: Standard set

If the temperature −150 C° is needed during the session, as soon as the temperature lowers to −140°±10°C, nitrogen supply should be decreased from 3 seconds to 2 seconds with the button "NITROGEN −" . If after the next supply the temperature does not remain within the set limits, the pause between nitrogen supply should be increased from 30 seconds to 40-50 seconds with button "NITROGEN PAUSE +". After this the temperature will stay within the set limits. Before the next session, if necessary, standard settings may be restored.

8.6 Drying modes

Before starting operation and each time after sessions are over (as well as after approximately 1 hour of work) the gas preparation device should be dried. For this purpose, press the button "DRY" on the control board. This mode is automatic and lasts for 40-60 min.

Drying will not start if the intake pipe is not lowered down.

After a cycle of 10-15 sessions (or approximately 1 hour of work) and each time after sessions are over for the day, the drying should ALWAYS last for 1 hour.

Before the sessions: if the previous drying was made no more than 24 hours ago, the drying mode is operated for 20-30 minutes and stopped with the "STOP" button. If it's more than 24 hours from the previous drying, dry the cabin for 1 hour.

For models with cryogenic valves: When the temperature in the cabin is about 10°C, open the tap near the valve in the refilling compartment to drain condensed water. Place some container beneath the tap, because about 50 to 200 g of water can be drained, depending on the number of sessions made.

8.7 Daily maintenance

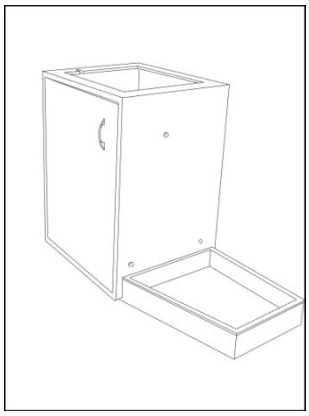
Daily maintenance involves cleaning the inside of the cabin with a dry soft flannel cloth. Besides, the movable cabin floor should be cleaned every day with a soft flannel cloth moistened in warm water with mild detergent with low alkali content (e.g., shampoo, soap). Special detergents for artificial leather can be used, too.

It is also recommended to dry condensed water on the inside of the cabin with a soft cloth after every 2-3 sessions to extend the service life of the interior lining.

9. ASSEMBLY SEQUENCE

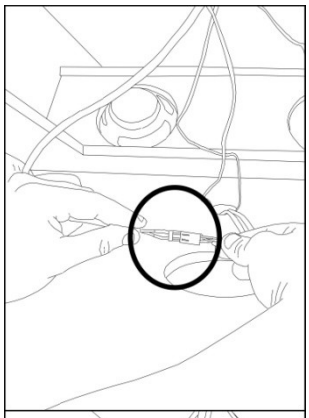
The assembly begins with preparation of the site for mounting cryocabin. The surface should be flat, level, with inclination no more than 0.5% (5 mm for 1m of length).

1. After preparing the site, the platform is mounted on the site and aligned.

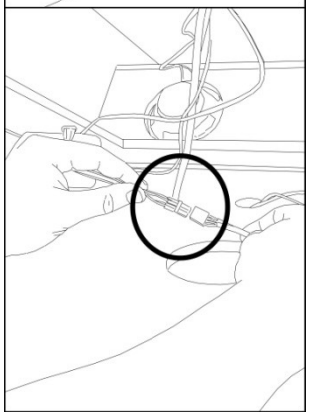


2. For Premium/Standard model, go to step 3. For Luxe model, install the superstructure onto the gas preparation device. **Be sure to take out the transportation bolt in the upper part of the gas preparation device which fixes the pipe lifting mechanism.**

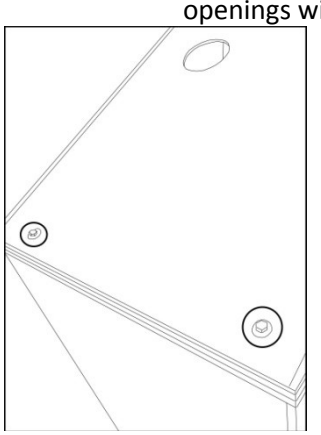
a) Connect the two-terminal lighting cables.



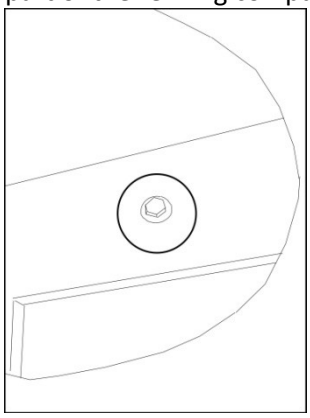
b) If necessary, connect 4-terminal audio system cable.

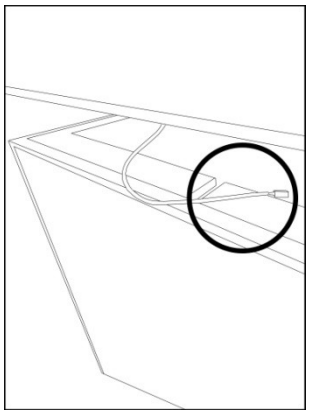


3) Fix the superstructure to the gas preparation device with two long and 2 short bolts. The latter are accessible through ventilation openings. Cover the openings with grids.

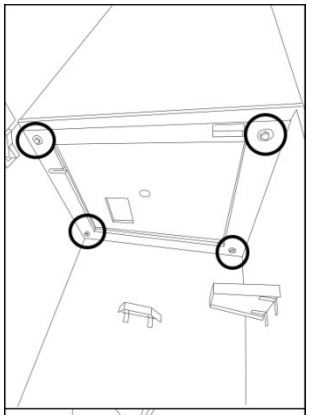


3. The gas preparation device is to be mounted on higher part of the platform. Insert the connecting cable for the rheostat into the opening in the upper part of the refilling compartment.

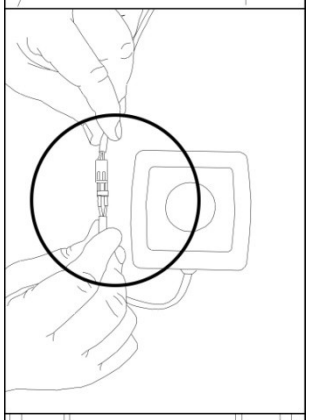




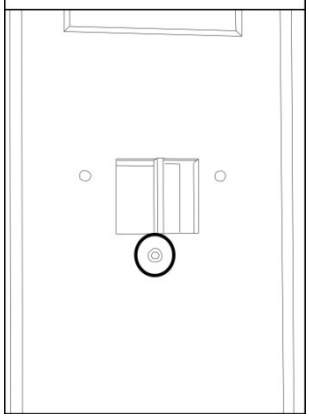
4. Open the door of the refilling compartment in the platform, insert and tighten 4 bolts M10x22.



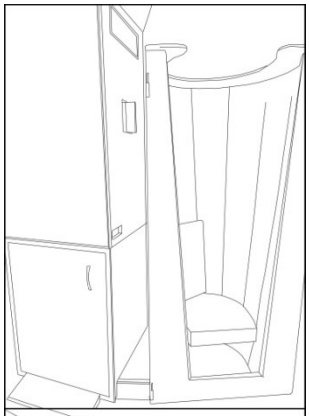
5. Connect the rheostat cable.



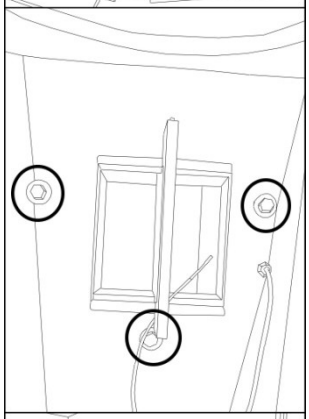
6. Remove the transportation bolt in the cabin, which is located below the rectangular opening.



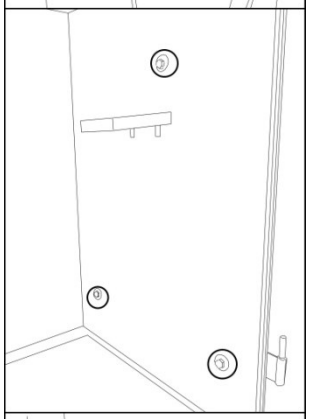
7. Place the client cabin without the door onto the lower part of the platform so that rectangular openings in the gas preparation device and the cabin are aligned. Align the cabin so that three upper and three lower holes for the bolts are aligned with the correspondent holes in the gas preparation device and the platform.



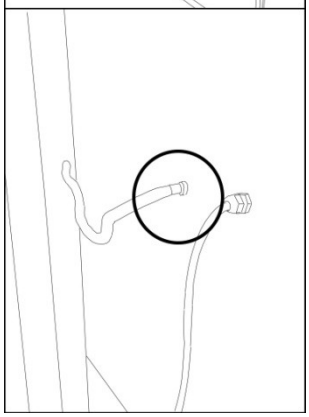
7. Fix the cabin by means of:
- 3 bolts M10 x 60 to the gas preparation device;



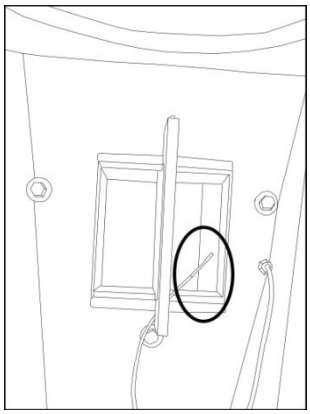
- 3 bolts M10 x 40 to the platform (open the door of the refilling compartment and tighten the bolts).



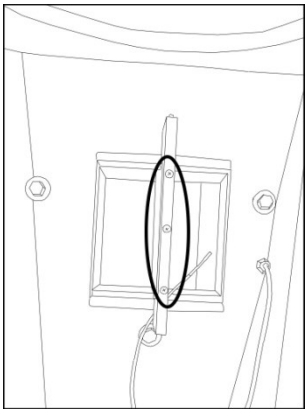
8. Connect the elevator and temperature sensor cables located at the rear wall of the gas preparation device.

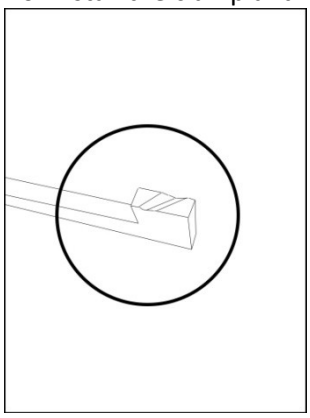


9. Locate the temperature sensor in a special groove in the clamp as shown. The position of the temperature sensor should be as shown in the picture, it should be centered in the lower third part of the opening.

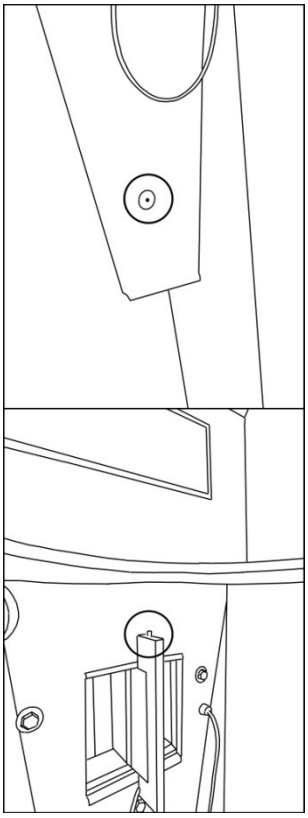


10. Install the clamp and fix it with three bolts.



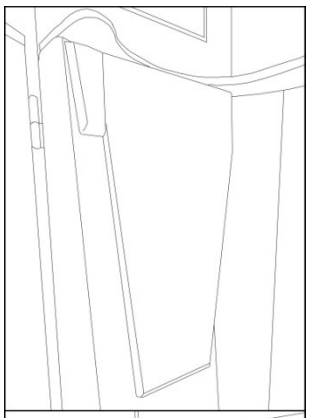


11. To cover the rectangular opening in the cabin and the clamp with the temperature sensor, install the shield onto the bolt.

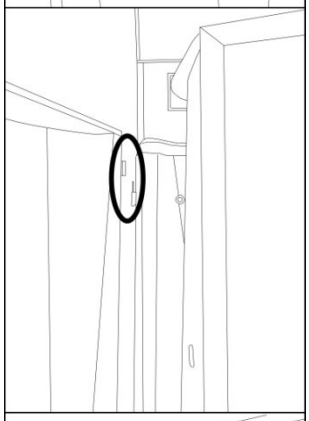


12. Fix the shield on the cylindrical pin located in the upper part of the clamp.

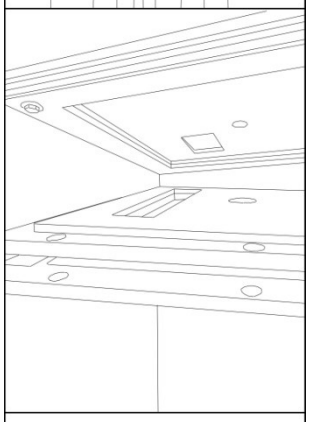
13. Make sure that the shield is installed tightly and bears against the walls of the cabin.



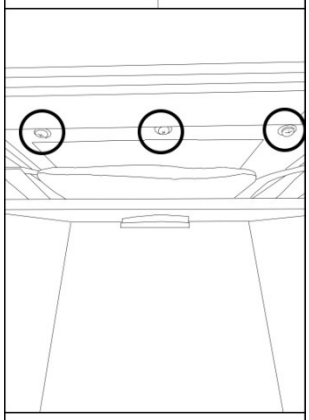
14. The door is mounted on its hinges. Please check it for tightness and align, if needed.



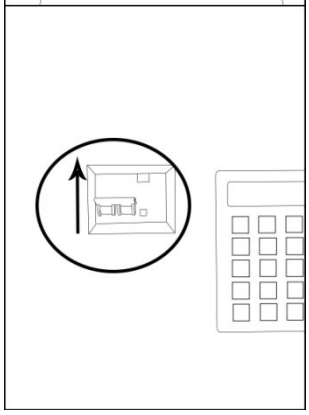
15. Install the bellows into the gas preparation device. Align the rectangular openings in the bottom of the gas preparation device and the bellows.



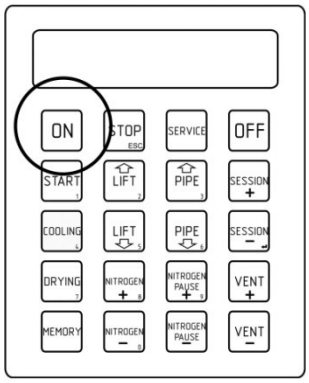
16. Tighten all 6 M8x50 bolts. Make sure that the bellows are snug against the lower part of the gas preparation device.



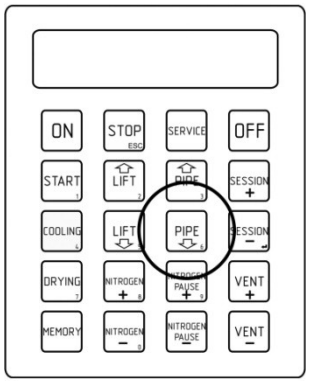
17. Plug the cryosauna. Put the automatic switch, located on the front part of the gas preparation device, into the upper position.



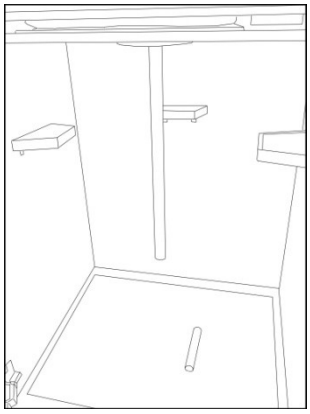
18. Press the button «ON» at the control panel.



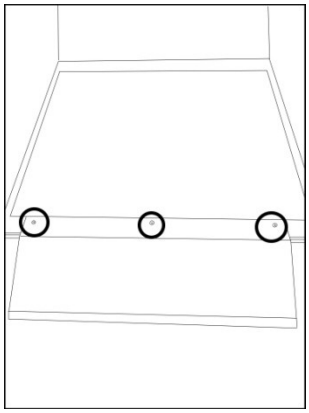
19. Lower the intake pipe by pressing «PIPE ↓»

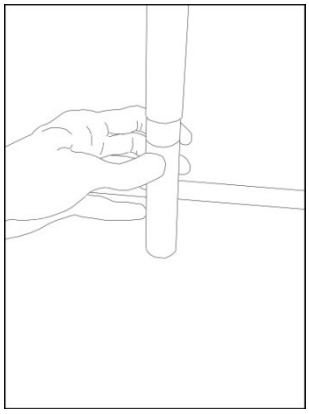


20. Install the pipe extension onto the intake pipe. Be sure to screw it on up to the stop holding the intake pipe.

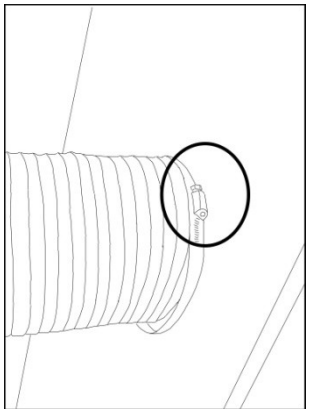


21. Open the door of the refilling compartment and fix the ramp with the screw to roll in the Dewar



vessels. 

22. The air duct (corrugated pipe) for evacuation of exhaust nitrogen vapours is installed at the special opening at the back of the gas preparation device. There are 2 clamps on the duct, to fix it on both sides: on one side to the cabin, on the other side to the pipe with the diameter 125 mm installed in the wall or window.



10. TROUBLESHOOTING

The list of probable malfunctions is indicated in Table 1.

Table 1

	No.	Description of malfunction and its symptom	Probable cause	Means of elimination
1.		Working mechanisms will not switch on	The Plant is unplugged or the automatic circuit-breaker is switched off.	Insert the plug into the socket, put the switch to upper position.
2.		After pressing down the red button (6) on the control board, the control board is not switched on	No power	Open batteries compartment (located inside the box behind the control board under the grey cover) and fix the contacts or replace the battery.
3.		The temperature in the customer cabin does not go down to the rated values.	Shortage of liquid nitrogen in the Dewar vessel or rupture in the bellows	Increase exposure of nitrogen supply (19) by 1-2 points. Replace the bellows.
4.		The control board will not switch on	No power	Check if the automatic switch (on the front panel of the gas preparation device) is in upper position.

5.		The drying will not turn on.	The intake pipe is in upper position.	Lower the pipe

CAUTION! In case of malfunction or serious failure of the Plant, it should be unplugged. Do not attempt to repair it or interfere with the mechanisms. Non-observance of above mentioned requirements is potentially hazardous for human life and may result in the damage to the Plant and other property. Please contact qualified personnel, which are authorized to perform repair and maintenance by the Manufacturer.

11. MARKING

The Plant's labeling is shown on a nameplate (see Fig. 3), fixed on the electric cabinet near the automatic circuit-breaker. The nameplate contains the data as follows:

- Type of the Plant: SPACE CABIN;
- Refrigerant – liquid nitrogen;
- Mains voltage;
- Mains frequency;
- Consumption power;
- IP protection level;
- Year of manufacture:
- Serial number;
- Country of origin;
- CE sign

Manufacturer **Cryomed s.r.o.**
Cooling Plant **SPACE CABIN**
~ 230 V 50 Hz; class I
Power consumption **1.5 kW**
Protection class **IP 54**
Refrigerant **liquid nitrogen**
Year of manufacturing **2014**
Made in Slovakia
Serial number
CE
ISO 9001:2008

Fig. 3. Nameplate.

The Manufacturer's Company trademark is placed on the face part of the gas preparation device.

12. MANUFACTURER'S GUARANTEE

The Manufacturer's guarantees performance of the Plant in conformity with the technical characteristics specified in the Acceptance Certificate under the condition that the Customer has fully complied with the requirements to transportation, handling, installation, operation and storage defined herein and in the sales and shipment agreements.

The warranty period for the Plant is 12[1]/24 months from the date of commissioning indicated in the Acceptance Certificate, but no more than 25 months from the date of shipment to the end user, or 3,000[2]/ 3,000 sessions, whatever comes first.

The Plant should be used only under the specified conditions and for specific application. Any other application is considered to be non-conforming, and, therefore, hazardous. Any liability on the part of the Manufacturer under the present Contract or beyond it for the mistakes made during operation or in any case of non-observance of the Manufacturer's requirements is excluded.

If during the warranty period any unit or assembly fails through the Manufacturer fault, the Consumer is entitled for free repair, during which all the defects are to be eliminated, units and assemblies which failed during transportation or operation are replaced.

The Manufacturer's guarantee policy is excluded and free after-sales service of the Plant is not performed in the following cases:

A) The Plant bears evidence of attempted unqualified, unauthorized repairs;

B) The Goods bear evidence of mechanical damage of the leather/fabric and the outer shell;

B) The defect is caused by changes made in the design or in the circuit diagram which are not provided by the Manufacturer.

C) The revealed defects are caused by foreign objects, matter, liquids, insects, animals and so on found out in the Plant.

D) Failure to observe the Plant operation modes referred in present manual.

E) Unauthorized dismounting and transfer (transportation) of the Plant to a different location.

F) If the damage was caused by force-majeure circumstances, i.e. power supply failures, lightning, fire, food etc.

The warranty period is not subject of prolongation, renovation or any other alteration in case if resale, disassembling and transportation were not agreed with the Manufacturer. In this case the warranty for the units and assemblies repaired or replaced during the warranty period still remains in force for the rest of the initial warranty period.

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1 only for companies

2 only for companies

13. CONFORMITY DECLARATION

Cryomed s.r.o. hereby declares that the cryosauna 'SPACE CABIN'" corresponds to all the concerned instructions, directives and standards:

Directive 2006/42/EC on Machinery which replaced the 98/37/EC Machinery directive
Standards: EN ISO 12100-1:2003, EN ISO 12100-2:2003, EN ISO 13732-3:2005

2006/95/ES Low Voltage Directive

Standard: EN 60335-1: 2002

2004/108/EC EMC Directive

Standard: EN 61000-6-3:2001, EN 55014-1:2000, EN 61000-6-1:2001,

EN 61000-4-4:2004, EN 61000-4-5:1995, EN 61000-4-11:2004, EN 55014-2:1997

MANUFACTURER:

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